



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,855	04/30/2001	Thiemo Lang	GR 00 P 1807	9507
24131	7590	04/20/2005	EXAMINER	
LERNER AND GREENBERG, PA P O BOX 2480 HOLLYWOOD, FL 33022-2480			BELLO, AGUSTIN	
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/845,855

Applicant(s)

THIEMO LANG

Examiner

Agustin Bello

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 7-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2633

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of group I the species of Figure 3 in Paper No. 8 is acknowledged.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art cited by the applicant (Figure 1) in view of Weber (U.S. Patent No. 5,351,317).

Regarding claims 1, 19, and 20, the prior art cited by the applicant teaches an optical dispersion compensator (Figure 1 of the instant application marked "Prior Art"), comprising: an optical input (e.g. "Input" to reference numeral 1 in Figure 1) receiving an incoming signal having an input spectrum (e.g.  $f_L$ ,  $f_H$  in Figure 1), a frequency demultiplexer (reference numeral 1 in Figure 1) connected to said input and configured to split the incoming signal into two frequency bands (e.g.  $f_L$ ,  $f_H$  in Figure 1); two transmission links (reference numerals 4.1 and 4.2 in Figure 1) connected to said frequency demultiplexer and each receiving a respective one of the two frequency bands, said transmission links including an optically shorter transmission link (reference numeral 4.1 in Figure 1) and an optically longer transmission link (reference numeral 4.2 in Figure 1) acting as a delay line (e.g.  $\Delta L(\Delta\tau)$  shown in Figure 1); and at least one frequency recombination unit (reference numeral 3 in Figure 1) connected to said transmission links for

Art Unit: 2633

recombining the signals received from said transmission links, and having an optical output (e.g. "Output" shown in Figure 1). The prior art cited by the applicant differs from the claimed invention in that it fails to specifically teach a polarization converter connected in at least one of said transmission links wherein said polarization converter causing the two frequency bands to be polarized orthogonally when combined in said at least one frequency recombination unit. However, connecting a polarization converter to at least one of the transmission links in a system similar to the prior art is well known in the art. Weber, in the same field of endeavor, teaches it is well known in the art to employ a polarization converter in at least one of the transmission links (reference numeral 40 in Figure 4). One skilled in the art would have been motivated to use a polarization converter as that taught by Weber in order to make the device polarization independent (column 4 lines 58-67). One skilled in the art could have expected a reasonable degree of success in implementing a polarization converter as taught by Weber in the device of the prior art cited by the applicant since both systems deal with demultiplexing frequency multiplexed signals, transmission links of different lengths, and recombining of multiple frequency signals to form a multiplexed output. Furthermore, the polarization converters taught by Weber are clearly capable of producing an orthogonal relationship between the two frequency bands. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a polarization converter as taught by Weber in at least one of the transmission links of the prior art cited by the applicant in order to make the device of the prior art polarization independent.

Art Unit: 2633

Regarding claim 2, the prior art cited by the applicant teaches said first and second transmission links (reference numerals 4.1, 4.2 in Figure 1) are Mach-Zehnder arms (page 17 lines 20 of the specification of the instant application).

Regarding claim 3, the prior art cited by the applicant teaches that said input is connected to receive the incoming signal from an optical transmission link (inherent in the description of the "spectral division" of the input signal of page 17 lines 22-24 of the specification of the instant application).

Regarding claim 4, the prior art cited by the applicant teaches that said optical output is connected to output an optical signal recombined from the spectrally divided signals to an optical transmission link (inherent in that the rest of the system is optical).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art cited by the applicant (Figure 1) in view of Weber (U.S. Patent No. 5,351,317) and Henry (U.S. Patent No. 4,998,793).

Regarding claim 5, the combination of the prior art cited by the applicant and Weber differs from the claimed invention in that it fails to specifically teach that said frequency recombination unit is a TE/TM polarization combiner. However, frequency TE/TM polarization recombination units are well known in the art. Henry, teaches that a recombination unit that functions as a TE/TM polarization combiner (Figure 1; column 7 lines 29-36). One skilled in the art would have been motivated to employ a TE/TM polarization combiner as the recombination unit in the combination of the prior art cited by the applicant and Weber in order to allow both TE and TM modes to be output from the device. One skilled in the art could have expected a reasonable degree of success in implementing the TE/TM polarization combiner in the device of

Art Unit: 2633

the combination of the prior art and Weber since Henry teaches that the TE/TM polarization combiner is simply a fusion of two fiber arms (Figure 1 of Henry), fiber arms also taught by the prior art cited by the applicant (reference numeral 4.1, 4.2 in Figure 1). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to employ a TE/TM polarization combiner as polarization recombination unit of the combination of references in order to allow both TE and TM modes to be output from the device.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art cited by the applicant (Figure 1) in view of Weber (U.S. Patent No. 5,351,317) and Ooi (U.S. Patent No. 5,917,628).

Regarding claim 6, the combination of the prior art cited by the applicant (Figure 1) and Weber differs from the claimed invention in that it fails to specifically teach that said frequency recombination unit is a 3-dB coupler. However, 3-dB couplers are very well known in the art. Ooi teaches the use of 3-dB couplers to combine optical signals (Figure 15). One skilled in the art would have been motivated to use a 3-dB coupler as the frequency recombination unit in the combination of references since they present, at max a 3-dB loss in signal, and because of this are a cost effective alternative to the multiplexer taught by the prior art cited by the applicant. One skilled in the art could have expected a reasonable degree of success in using the 3-dB coupler taught by Ooi as the frequency recombination unit of the combination of references since the 3-dB coupler provides a cost effective means for coupling signals from two fibers, much like the two fibers arms taught by the prior art cited by the applicant (reference numerals 4.1 and 4.2 in Figure 1). Therefore, it would have been obvious to one skilled in the art at the time the

Art Unit: 2633

invention was made to use a 3-dB coupler as the frequency recombination unit of the combination of references in order to reduce the overall cost of the system.

***Response to Arguments***

1. Applicant's arguments filed 10/25/04 have been fully considered but they are not persuasive. The applicant argues that neither the prior art cited by the applicant (Figure 1) nor Weber show the polarization converter and the frequency combination unit. However, the opposite is true. As stated in the office action, the prior art cited by the applicant (Figure 1) teaches the polarization converter while Weber teaches the polarization converter. The examiner maintains that the combination of references obviates the claimed invention.

As to the polarization converter producing a particular effect between the branched signals, it is clear that the polarization converters such as those taught by Weber are capable of producing polarization differences between the two signals such that an orthogonal relationship between the two signals exists.

The applicant further argues that Weber teaches away from the claimed invention in that Weber teaches a symmetrical device. However, Weber's symmetry is immaterial being that the applicant claims that the polarization converter is connected in "at least one" of the transmission links. This claim language does not preclude placing polarization converters in both transmission links as taught by Weber.

2. In response to applicant's argument that the combination of Weber and prior art cited by the applicant (Figure 1) fail to teach that said polarization converter causes the two frequency bands to be polarized orthogonally when combined in said at least one frequency recombination unit, a recitation of the intended use of the claimed invention must result in a structural

Art Unit: 2633

difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

### ***Conclusion***

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.




Art Unit: 2633

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB

  
AGUSTIN BELLO  
PATENT EXAMINER  
4/12/05